

ABSTRACT

A method of forming dual gate insulator layers, each with a specific insulator thickness, featuring a HF type pre-clean procedure performed prior to formation of each of the gate insulator layers, has been developed. After a first HF type pre-clean procedure a silicon nitride layer is deposited on the native oxide free, semiconductor substrate followed by selective removal of silicon nitride layer from a second portion of the semiconductor substrate. After a second HF type pre-clean procedure a silicon dioxide gate insulator layer is formed on the second portion of the native oxide free, semiconductor substrate, with the silicon dioxide gate insulator layer comprised with a different thickness than the silicon nitride gate insulator layer, located on a first portion of the semiconductor substrate. The procedure used to form the silicon dioxide gate insulator layer also removes bulk traps in the silicon nitride gate insulator layer.